

Message Source 2: -70 dBm Time Offset: 1.0 milliseconds.

Observe that the UUT equipment reports reception of only messages with TIS-B Site ID = 0x2, at a success rate of 99% or greater.

Note: *This procedure verifies the requirements of §2.2.8.3.4.b, in that the louder overlapping message is properly detected and reported.*

2.4.8.3.5 Verification of Receiver Time of Message Receipt (§2.2.8.3.5)

Purpose/Introduction:

The receiver **shall** declare a Time of Message Receipt (TOMR) and include this as part of the report issued to the on-board application systems. The TOMR value **shall** be reported to within the parameters listed below:

- a. Range of at least 25 seconds expressed as seconds since GPS midnight modulo the range.
- b. Resolution of 100 nanoseconds or less.
- c. Accuracy of +/- 500 nanoseconds ~~of the actual time of receipt~~ relative to the optimum sample point of the first bit of synchronization sequence applied at the receiver terminals for UAT equipment using either an internal, or external UTC coupled time source.
- d. The reported TOMR will be equal to the following quantity: seconds since the previous UTC midnight modulo the specified TOMR range.

Note: *TOMR is required to support ADS-B Time of Applicability (TOA) and range validation by a receiving application. See Appendix I for a discussion of UAT Timing Considerations. ADS-B applications derive the TOA from the TOMR as follows:*

1. *If the report indicates UTC Coupled, and is in the Non-Precision Condition, the TOA is the TOMR truncated to the start of the UTC second.*
2. *If the report indicates UTC Coupled, and is in the Precision Condition, the TOA is the TOMR truncated to the start of the 0.20 second UTC epoch containing the TOMR.*
3. *If the report indicates Non-UTC Coupled, the TOA is the TOMR minus one (1) second.*

The purpose of this test procedure is to verify that the Time of Message Receipt (TOMR) is declared by the receiver as a part of the report issued to the on-board application systems according to the parameters outlined in §2.2.8.3.5.

Equipment Required:

Provide equipment capable of supplying valid ADS-B and Ground Uplink Messages to the ADS-B Receiving Subsystem being tested. Provide an Elapse Timer with a resolution of at least 100 nanoseconds.

Measurement Procedure:Step 1: Apply messages to the receiver and verify the (TOMR) output

Apply a valid ADS-B Message to the receiver with the optimum sampling point of the first bit of the synchronization sequence, applied at the receiver terminals, arriving at 900 milliseconds \pm 100 nanoseconds after the leading edge of the UTC Time Mark. Verify that the TOMR reported at the output of the ADS-B Receiving Subsystem for the ADS-B Message has a value of 900 milliseconds \pm 600 nanoseconds relative to the time of the UTC Time Mark.

Apply a valid Ground Uplink Message to the receiver with the optimum sampling point of the first bit of the synchronization sequence, applied at the receiver terminals, arriving at 100 milliseconds \pm 100 nanoseconds after the leading edge of the UTC Time Mark. Verify that the TOMR reported at the output of the ADS-B Receiving Subsystem for the Ground Uplink Message has a value of 100 milliseconds \pm 600 nanoseconds relative to the time of the UTC Time Mark.

2.4.9 Verification of Report Assembly Requirements (§2.2.9)

Appropriate test procedures required to validate the requirements of §2.2.9 are included in §2.4.9.1 and §2.4.9.2.

2.4.9.1 Verification of Report Assembly on Receipt of ADS-B Message (§2.2.9.1)Purpose/Introduction:

Reports **shall** contain the following information:

- a. All elements of the received message payload applicable to the ADS-B report type with range, resolution and units of each payload field preserved.
- b. The Time of Message Receipt value measured by the receiver.

Note: *Time of Applicability may be derived by the receiving application from the TOMR.*

Equipment Required:

Use the equipment required for the test procedure in §2.4.10.3.

Measurement Procedures:

This test procedure verifies the requirements of §2.2.9.1. Note that verification of requirements for the Time of Message Receipt (TOMR) value is covered in §2.4.8.3.5, and is not further verified here.

Note: *This test procedure can be performed simultaneously with the procedure of §2.4.10.3.*